

Remarks

Claims 14-33 are pending in this application.

As set forth in the previous response, Applicants' invention is an aqueous dispersion for hydrophobic finishing of fibers and flat textiles. The aqueous dispersion comprises a mixture of at least two different copolymers (a) and (b) and an emulsifier in an aqueous medium. Copolymer (a) is a copolymer containing residues of esters of substituted or unsubstituted acrylic acid with branched or unbranched alkyl alcohols containing from 8 to 22 carbon atoms and residues of esters of substituted or unsubstituted acrylic acid with alkyl alcohols containing from 1 to 6 carbon atoms and a copolymer (b) which comprises residues of esters of substituted or unsubstituted acrylic acid with a perfluorinated alcohol and esters of a substituted or unsubstituted acrylic acid with an alcohol containing from 1 - 6 carbon atoms. The aqueous dispersion also contains an emulsifier (c). The aqueous dispersion of the invention is a mixture of two separate polymer dispersions. One of the polymer dispersions contains a polymer containing residues of an ester of substituted or unsubstituted acrylic acid with a perfluorinated alcohol and residues of a substituted or an unsubstituted acrylic acid with a 1-6 carbon atom alcohol.

The second polymer in the polymer mixture comprises residues of the substituted or unsubstituted acrylic acid with a C1-6 carbon atom alcohol and residues of a substituted or unsubstituted acrylic acid with a C8-22 carbon atom alcohol. The two dispersions are formed independently then mixed to form the composition of the present invention. The Composition of the present invention is a mixture of two polymers which due to their structure, do not crosslink to a significant extent. The polymers are formed separately in two separate dispersions and the dispersions of the two separate polymers are mixed to form the aqueous dispersion of the present invention. The polymers do not react in the dispersion but merely form a mixture which is applied to the fiber or flat textile to provide a hydrophobic finish comprising the dried

polymer dispersion. In a weight ratio of copolymer (a) to the copolymer (b), is 10:1 to 1:10, preferably 5:1 to 1:3.

The claims stand rejected under 35 U.S.C. 103(a) as unpatentable over Maekawa et al. (EP 1,146,103 A1) in view of Bedikian et al. (U.S. 3,536,779). Applicants respectfully submit that Maekawa et al. and Bedikian et al., whether considered alone or in combination neither teach nor suggest the present invention.

Maekawa et al. has been discussed in great detail in the response submitted August 2, 2006; the entire contents of which are incorporated herein by reference.

The Maekawa et al. polymer can be a polymer completely containing fluorinated acrylate residues, or can be a polymer containing residues of fluorinated acrylate monomers and non-fluorinated acrylate monomers. The aqueous dispersion also contains an emulsifying agent, a solvent, and an aqueous medium. The polymer is prepared by forming an emulsion of the monomers which are to make up the polymer by a high pressure emulsifier. The monomers are either all fluorine-containing acrylates or a mixture of fluorine-containing acrylates with non-fluorine-containing acrylates. The monomers are polymerized by a free radical mechanism and the dispersion of the single polymer dissolved in a solvent is utilized to coat a textile substrate to form a hydrophobic and lipophobic coating. Example 9 of the specification shows that the high-pressure emulsification is critical to form a polymer dispersion which is useful to coat a substrate with a hydrophobic and lipophobic coating.

Maekawa et al. is deficient in neither teaching nor suggesting an aqueous dispersion coating composition for a fiber or a textile substrate which is a mixture of a first polymer which does not contain perfluoro acrylate residues and a second polymer which contains perfluorinated acrylate residues and non-perfluorinated acrylate residues. Applicants respectfully submit that Maekawa et al. neither teaches nor suggests the present invention.

The deficiencies in Maekawa et al. are not cured by combination with Bedikian et

al. Bedikian et al. is a solution containing two reactable and cross-linkable polymers which contain various cross-linking groups which, when the solutions are mixed and polymerized are further polymerized when the solution is applied to a substrate and heated to remove the solvent and cross-link the mixture of up to 4 different polymers.

The first solution polymer is a partially cured acrylic copolymer which comprises a copolymerizable mixture of about 1 to 10% by weight of a monoethylenically unsaturated monomer of glycidal methacrylate and 70 to 99% by weight of a lower aliphatic acrylic acid ester and a second copolymer (b) which is a polymer formed by a mixture of an alkyl substituted silicone prepolymer having pendant hydroxyl functional groups. The silicone prepolymer-vinyl alkoxy silane reaction product is added to the partially polymerized acrylic copolymer to form a flowable coating composition solution which further reacts and the coating composition is applied to a substrate and cured to form the resinous film.

The acrylic copolymer comprises from about 50 to 90% by weight of the composition and each of the silicone prepolymers and vinyl alkoxy silane comprise about 2 to about 12% by weight of the composition coated on the substrate. The coating, when heated, cross-links to form a coating with improved durability, solvent resistance, low temperature flexibility and water-resistance.

As stated at column 2, lines 20-37, "it has been found that the application in a precisely specified manner of the coating composition (a) and any cross-linkable acrylic ester polymer such as an acrylic copolymer formed by reaction of the resinous composition composed of a copolymerizable monoethylenically unsaturated monomer comprising from 1 to 10% by weight of glycidal methacrylate and 70 to 99% by weight of at least one lower aliphatic ester of acrylic acid in the solvent mixture of 50-60% by weight of a saturated aliphatic alcohol of C1-C7 carbon atoms and 40-50% of an ester of a lower aliphatic carboxylic acid, (b) a polymerizable silicone prepolymer having unreacted pendant hydroxyl and hydrogen functions therein and (c) any silane with

carbon-functional groups, preferably types having a double bond such as vinyl alkoxy silane monomer having side reactive organic radicals."

The Bedikian et al. composition is formulated in a solvent and is not an aqueous dispersion as is the polymer dispersion of Maekawa et al. and the polymer dispersion of the present invention. Applicants respectfully submit that Bedikian et al. does not cure the deficiencies in Maekawa et al.

Applicants respectfully submit that Bedikian et al. is not properly combinable with Maekawa et al. Clearly, the two polymers are substantially different, both compositions are not aqueous dispersions and, in addition, the Bedikian et al. composition is a cross-linkable composition.

Applicants respectfully submit that there is nothing in Bedikian et al. which would lead one skilled in the art to combine the teachings of Bedikian et al. with Maekawa et al. to arrive at the present invention. Firstly, Bedikian et al. neither teaches nor suggests utilizing fluorinate hydrocarbons to provide a hydrophobic and lipophobic coating. Secondly, Bedikian et al. is directed to a solvent solution of the polymers rather than an aqueous dispersion which would provide a composition substantially different from the aqueous dispersion of Maekawa et al. and the aqueous dispersion of the present invention. Applicants therefore respectfully submit that Bedikian et al. is not properly combinable with Maekawa et al. to form a prima facie case of obviousness on which the present application can be rejected under 35 U.S.C. 103(a).

As shown by the formulas of the monomers useful to form the copolymers which form the mixture of the present invention, the polymers are not cross-linkable. The non-cross-linkable nature of the copolymers of the present invention which form the dispersion of the mixture of polymers, are neither taught nor suggested by Bedikian et al. alone or in combination with Maekawa et al.

Applicants respectfully submit that there is neither teaching nor suggestion in Bedikian et al. which would lead one skilled in the art to form the mixture of polymer

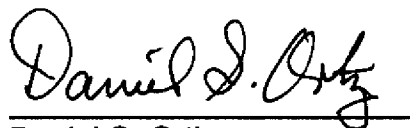
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Reply to Office action of September 6, 2006

dispersions useful in the practice of the present invention. Applicants therefore respectfully submit that the combination of Maekawa et al. with Bedikian et al. neither teaches nor suggests the present invention and a rejection under 35 U.S.C. 103(a) over the combination of the references is untenable. Applicants respectfully request that the rejection be reconsidered and withdrawn.

In the Official Action, the Examiner has completely ignored the cross-linkable nature of the Bedikian et al. composition, that the composition is a solution rather than a dispersion and that the copolymers useful in the invention are not fluorine-containing acrylates. Applicants therefore respectfully submit that Bedikian et al. does not cure the deficiencies in Maekawa et al.

Applicants respectfully request favorable consideration of the claims presently in the application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Daniel S. Ortiz", is written over a horizontal line.

Daniel S. Ortiz
(Reg. No. 25,123)
Attorney For Applicant(s)
215-628-1141

Cognis Corporation
Patent Department
300 Brookside Avenue
Ambler, PA 19002

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